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PATENT ABSTRACTS OF JAPAN(21) Application number: **57086626**(51) Intl. Cl.: **H01L 21/30**(22) Application date: **24.05.82**

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**(54) MASK FOR X-RAY
LITHOGRAPHY****(57) Abstract:**

PURPOSE: To obtain a mask for X-ray lithography which is reduced in alignment errors, excellent in chemical resistance and transparent to even a visible light, by employing a thin film constituted by diamond or a mixture of diamond and amorphous carbon.

CONSTITUTION: Since diamond has the highest thermal conductivity in the known materials, the employment of diamond makes it possible to quickly transmits to the outside the heat absorbed by an X-ray absorber, such as Au or the like, which is formed on a transparency, and minimize the rise in temperature of a mask due to exposure. As a result, it is possible to prevent any alignment error of a pattern. Moreover, since the mask is constituted by a transparent thin film, a visible light can be employed for alignment. To obtain an X-ray lithography mask, it is effective to form a transparent film

constituted by diamond and amorphous carbon by employing magnetron sputtering or ion beam sputtering. Thus, a mask is obtained which has a sufficiently high film strength and an excellent light-transmitting property.

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